

REMARKS

Claims 1-14, 17 and 20 are rejected under 35 U.S.C § 112, second paragraph as being indefinite. It is the examiner's position that it is unclear what is meant by a "rosin derived alcohol" or a "rosin derived mono-ol." The examiner urges that the structure of the rosin derived alcohol should be clearly set forth in the claims. Applicant disagrees.

One skilled in the art would know that a rosin derived alcohol is an alcohol derived from a rosin, e.g., by converting an acid moiety to an hydroxy (alcohol) group. The skilled artisan would not interpret "rosin derived alcohol" to be an ester of rosin obtained by reacting rosin with an alcohol as does the examiner. Moreover, while the examiner appears to urge that "hydrogenated rosin" and "rosin derived alcohol" are the same thing, one skilled in the art would disagree.

A hydrogenated rosin is a rosin that has been hydrogenated in order to reduce unsaturation. The examiner is referred to the definition of "hydrogenation" set forth in Hawley's CONDENSED CHEMICAL DICTIONALRY (11<sup>th</sup> edition 1987). See page 616, copy attached, that defines hydrogenation as referring to the reaction of hydrogen with an organic compound whereby hydrogen is added to the double bonds of unsaturated molecules, resulting in a saturated product.

While applicants recite on page 5 of the specification that "[s]uitable rosin derived alcohols include hydrogenated rosin, available from Hercules under the tradename Abitol E," this is not an admission that "hydrogenated rosin" and "rosin derived alcohol" are the same thing, and such would be recognized by the skilled artisan. Chemically, ABITOL-E Resin is a high molecular weight, primary, monohydric alcohol derived from rosin acids that have been hydrogenated to

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reduce unsaturation.

Claims 1-6 and 8-10 are rejected under 35 U.S.C § 102 (b) as being anticipated by WO 01/29134.

Claims 1-6 and 8-10 are rejected under 35 U.S.C § 102 (b) as being anticipated by each of Dillman et al. (U.S. Patent No. 5,536,772), Erickson (U.S. Patent No. 5,382,604 or 5,389,701 or 5,686,535) or Handlin, Jr. et al. (U.S. Patent No. 5,446,104).

Claims 1-6 and 8-10 are rejected under 35 U.S.C § 103 (a) as being unpatentable over Ohtsuka et al. (U.S. Patent No. 5,840,809) in view of Erickson '535.

Claims 1-6 and 8-10 are rejected under 35 U.S.C § 103 (a) as being unpatentable over Kiibler et al. (U.S. Patent No. 5,691,414) or Southwick et al. (U.S. Patent No. 5,776,998) each in view of Dillman et al. (5, 536,772) or Erickson '604 or '701.

Claims 1-6 and 8-10 are rejected under 35 U.S.C § 103 (a) as being unpatentable over Kiibler et al. (U.S. Patent No. 5,691,414) or Southwick et al. (U.S. Patent No. 5,776,998) each in view of Dillman et al. (5, 536,772) or Erickson '604 or '701 and a photoinitiator. Preferred rosin derived alcohols are rosin derived mono-ols.

None of the cited WO 01/29134, Dillman et al., Erickson '604, '701 or '535, or Handlin, Jr. et al. (U.S. Patent No. 5,446,104) disclose a radiation curable adhesive, let alone a radiation curable pressure sensitive hot melt adhesive as required in claim 6, that comprises an epoxidized block copolymer, a saturated block copolymer and/or a rosin derived alcohol so as to anticipate the claimed invention. None of the Ohtsuka et al., Kiibler et al. or Southwick et al. primary reference combined with either of the Dillman et al., or Erickson '535, '772 or Erickson '701 disclose or

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suggest radiation curable adhesives comprising an epoxidized block copolymer, a saturated block copolymer and/or a rosin derived alcohol.

Applicant submits that the claimed invention represent an important and patentable contribution to the art. Early and favorable action is solicited.

Respectfully submitted,

  
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MARKED UP VERSION OF CLAIMS SHOWING CHANGES MADE

7 (amended). The adhesive of claim 1 wherein the adhesive comprises from about 15% to about 35% by weight of at the epoxidized block copolymer, from about 5% to about 15% by weight of at least one saturated block copolymer and from about 30% to about 60% by weight of at least one hydrocarbon resin and from about 3 to about 15% of a rosin derived mono-ol, up to about [0 to about] 25% of a rosin and/or rosin ester, up to about [0 to about] 30% of a mineral oil, and up to about 2% of an antioxidant.

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Exhibit A

*Hawley's  
Condensed Chemical  
Dictionary*

**ELEVENTH EDITION**

*Revised by*

**N. Irving Sax**

and

**Richard J. Lewis, Sr.**

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## HYDROGEN

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hydrogen. CAS: 1333-74-0. H<sub>2</sub>. Non-metallic element of atomic number 1, group 1A of periodic table, atomic weight 1.0079, valence = 1. Molecular formula is H<sub>2</sub>. Isotopes: deuterium (D<sub>2</sub>), tritium (T<sub>3</sub>). Hydrogen discovered by Cavendish in 1766, named by Lavoisier in 1783. Properties: A diatomic gas, density 0.8999 g/L, d 0.0694 (air = 1.0), specific volume 193 cu ft/lb (21.1C), fp -259C, bp -252C, autoign temperature 1075F (580C). Very slightly soluble in water, alcohol, and ether; Noncorrosive; can exist in crystalline state at from 4-1 degrees Kelvin; classed as an asphyxiant gas; rate of permeation through solids is approximately four times that of air.

Occurrence: Chiefly in combined form (water, hydrocarbons, and other organic compounds), traces in earth's atmosphere. Unlimited quantities in sun and stars. It is the most abundant element in the universe.

Derivation: (1) Reaction of steam with natural gas (steam reforming) and subsequent purification; (2) partial oxidation of hydrocarbons to carbon monoxide and interaction of carbon monoxide and steam; (3) gasification of coal (See Note 1); (4) dissociation of ammonia; (5) thermal or catalytic decomposition of hydrocarbon gases; (6) catalytic reforming of naphtha; (7) reaction of iron and steam; (8) catalytic reaction of methanol and steam; (9) electrolysis of water (See Note 2). In view of the importance of hydrogen as a major energy source of the future, development of the most promising of these methods may be expected.

See also gasification, and "Hypo" process.

Note 1: The projected cost of producing hydrogen from coal by proven gasification techniques has been estimated to be competitive with gasoline.

Note 2: More efficient methods than electrolysis for obtaining hydrogen from water are under investigation. One of these is thermochemical decomposition. Another is photochemical decomposition by solar radiation, either directly or via a solar power generator. Photolytic decomposition of water with platinum catalyst has been achieved. Hydrogen can also be obtained by photolytic decomposition of hydrogen sulfide with cadmium sulfide catalyst.

See also photolysis, thermochemistry.

Method of purification: By scrubbing with various solutions (see especially the Girbitol absorption process). For very pure hydrogen, by diffusion through palladium.

Grade: Technical, pure, from an electrolytic grade of 99.8% to ultra-pure with less than 10 ppm impurities.

See also para-hydrogen.

Hazard: Highly flammable and explosive, dangerous when exposed to heat or flame, explosive limits in air 4-75% by volume.

Use: Production of ammonia, ethanol, and aniline; hydrocracking, hydroforming, and hydrofining of petroleum; hydrogenation of vegetable oils; hydrogenolysis of coal; reducing agent for organic synthesis and metallic ores; reducing atmosphere to prevent oxidation; as oxyhydrogen flame for high temperatures; atomic-hydrogen welding; instrument-carrying balloons; making hydrogen chloride and hydrogen bromide; production of high-purity metals; fuel for nuclear rocket engines for hypersonic transport; missile fuel; cryogenic research. A treatise on the physical properties of hydrogen compiled by the National Bureau of Standards is available from the US Government Printing Office.

Note: A safe storage method for hydrogen for possible use as automotive fuel involves the use of metal hydrides from which the hydrogen is released at specified temperatures. Iron titanium hydride has been found the most satisfactory.

ortho-hydrogen. See para-hydrogen.

para-hydrogen. Type of molecular hydrogen preferred for rocket fuels. Molecular hydrogen (H<sub>2</sub>) exists in two varieties, ortho- and para-, named according to their nuclear spin types. Ortho-hydrogen molecules have a parallel spin, para- an antiparallel spin. By cooling to liquid air temperature and use of a ferric oxide gel catalyst, the normal equilibrium of 3 ortho- to 1 para- is displaced and para-hydrogen may be isolated. It is being produced with less than 5 ppm impurities.

hydrogenated terphenyls. CAS: 61788-32-7.

Complex mixtures of ortho- meta- and para- terphenyls in various stages of hydrogenation.

Hazard: TLV: 0.5 ppm.

Use: A heat-transfer medium and plasticizer.

hydrogenation. Any reaction of hydrogen with an organic compound. It may occur either as direct addition of hydrogen to the double bonds of unsaturated molecules, resulting in a saturated product, or it may cause rupture of the bonds of organic compounds, with subsequent reaction of hydrogen with the molecular fragments. Examples of the first type (called addition hydrogenation) are the conversion of aromatics to cycloparaffins and the hydrogenation of unsaturated vegetable oils to solid fats by addition of hydrogen to their double bonds. Examples of the second type (called hydrogenolysis) are hydrocracking of petroleum and hydrogenolysis of coal to hydrocarbon fuels.

See also hydrogenolysis, hydrocracking, hydroforming.

hydrogen azide. See hydrazoic acid.

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